UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/614,118	07/11/2000	David W. Cannell	5725.0393	1975

22852 7590 04/12/2006

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER	
SHEIKH, HUMERA N	

ART UNIT	PAPER NUMBER
1615	

DATE MAILED: 04/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/614,118	CANNELL ET AL.	
	Examiner	Art Unit	
	Humera N. Sheikh	1615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-56* is/are pending in the application.

4a) Of the above claim(s) *1-29* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *30-56* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Humera N. Sheikh
HUMERA N. SHEIKH
PATENT EXAMINER
TC-1600

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of the Application

Receipt of Appellant's Appeal Brief and the request for extension of time (4 months-granted) is acknowledged.

In view of Applicant's persuasive remarks filed 01/09/06, PROSECUTION IS HEREBY REOPENED. A new ground of rejection follows.

Claims 1-56 are pending in this action. Claims 1-29 have been withdrawn from consideration as being drawn to a non-elected invention. Claims 30-56 are rejected.

New Matter

Applicant's recitation of "*at least*" 45°C in instant claim 30 presents new matter since there is lack of support for this limitation in the present specification. While the limitation '*at* 45°C' and 'at 130°C' is supported by the instant disclosure, the limitation "*at least*" 45°C is not supported by the instant specification.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 30-56 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The factors to be considered in determining whether a disclosure meets the enablement requirement of 35 U.S.C. 112, first paragraph, have been described in In re Wands, 8 USPQ2d 1400 (Fed. Cir. 1988). Among these factors are: (1) the nature of the invention; (2) the state of the prior art; (3) the relative skill of those in the art; (4) the predictability or unpredictability of the art; (5) the breadth of the claims; (6) the amount of direction or guidance presented; (7) the presence or absence of working examples; and (8) the quantity of experimentation necessary. When the above factors are weighed, it is the examiner's position that one skilled in the art could not practice the invention without undue experimentation

(1) The nature of the invention/(5) breadth of the claims:

The invention is directed to a method of protecting a keratinous fiber from extrinsic damage or repairing a keratinous fiber following extrinsic damage, comprising applying to said keratinous fiber a composition comprising at least one sugar chosen from C_3-C_5 monosaccharides and derivatives thereof; and heating said keratinous fiber to at least 45°C, wherein said at least one sugar is present in an amount effective to protect said keratinous fiber or repair said keratinous fiber, further wherein said composition is applied prior to heating or during said heating, wherein protecting a keratinous fiber means preserving a greater degree of the α-structure and/or tensile strength of the keratinous fiber following treatment of the keratinous fiber with said composition as compared to not treating the keratinous fiber with said composition; and wherein repairing a damaged keratinous fiber means increasing the α-structure and/or tensile strength of the damaged keratinous fiber following treatment of the damaged keratinous fiber with said composition as compared to not treating the keratinous fiber with said composition.

(2) The state of the prior art:

The prior art teachings provide for hair care compositions and methods for repairing hair damage comprising the use of mono- and disaccharides.

(3) The relative skill of those in the art:

The relative skill of those in the art is high.

(4) The predictability or unpredictability of the art:
The predictability of the art is high.

(6) The amount of direction or guidance presented:
The specification filed 07/11/00 discloses a method of protecting a keratinous fiber from extrinsic damage or repairing a keratinous fiber following extrinsic damage, comprising applying to said keratinous fiber a composition comprising at least one sugar chosen from C_3-C_5 monosaccharides and derivatives thereof; and heating said keratinous fiber. The specification provides no guidance or direction on how to protect keratinous fiber from extrinsic damage or repair keratinous fiber using a temperature of "at least" 45°C as instantly claimed.

(7) The presence or absence of working examples:
The working examples are insufficient to establish the method of protecting a keratinous fiber from extrinsic damage or repairing a keratinous fiber following extrinsic damage. The examples demonstrate heat-treating hair at a temperature of 45°C (Example 2/3) and heat-treating at a temperature of at 130°C (Example 3). The examples do not establish a method of protecting keratinous fiber from extrinsic damage or repairing keratinous fiber using a temperature of "at least" 45°C as instantly claimed. The examples are distinct from the scope of the claims since instant Examples 2 and 3 demonstrate heating "at 45°C", whereas the instant claims recite "at least" 45°C. Therefore, the working examples are insufficient to establish the instant method of protecting or repairing keratinous fiber.

(8) The quantity of experimentation necessary:
The instant invention provides for a method of protecting a keratinous fiber from extrinsic damage or repairing a keratinous fiber following extrinsic damage, comprising applying to said keratinous fiber a composition comprising at least one sugar chosen from C_3-C_5 monosaccharides and derivatives thereof; and heating said keratinous fiber to at least 45°C, wherein said at least one sugar is present in an amount effective to protect said keratinous fiber or repair said keratinous fiber, further wherein said composition is applied prior to heating or

during said heating. When the above factors are weighed together, it is the position of the Examiner that it would require 'undue' and painstaking experimentation to arrive at the instant invention to determine which particular temperature or temperature range would be necessary for effectively protecting or repairing keratinous fibers.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 30-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wisotzki *et al.* (U.S. Pat. No. 4,900,545) in view of Buheitel (U.S. Pat. No. 6,116,250) OR Naito *et al.* (U.S. Pat. No. 4,935,229).

The instant invention is drawn to a method of protecting a keratinous fiber from extrinsic damage or repairing a keratinous fiber following extrinsic damage, comprising applying to said keratinous fiber a composition comprising at least one sugar chosen from C_3-C_5

monosaccharides and derivatives thereof; and heating said keratinous fiber to at least 45°C, wherein said at least one sugar is present in an amount effective to protect said keratinous fiber or repair said keratinous fiber, further wherein said composition is applied prior to heating or during said heating, wherein protecting a keratinous fiber means preserving a greater degree of the α-structure and/or tensile strength of the keratinous fiber following treatment of the keratinous fiber with said composition as compared to not treating the keratinous fiber with said composition; and wherein repairing a damaged keratinous fiber means increasing the α-structure and/or tensile strength of the damaged keratinous fiber following treatment of the damaged keratinous fiber with said composition as compared to not treating the keratinous fiber with said composition.

Witsozki ('545) teaches a method for the regeneration of hair split-ends and for caring for and revitalizing mistreated hair, comprising applying to the hair, a treatment composition comprising mono- or disaccharides, more especially, the pentoses (5 C-atoms) and hexoses (6 C-atoms), and also the disaccharides derived from the pentoses and hexoses (see reference column 1, line 49 through col. 2, line 49).

Witsozki teaches that the mono- or disaccharides are any aldoses and ketoses or their mixtures. Witsozki further teaches that suitable monosaccharides include glucose, mannose, galactose, ribose, arabinose, xylose, fructose and sorbose, while suitable disaccharides include sucrose, lactose, maltose and cellobiose (col. 2, line 36-49). Also suitable are naturally occurring or technical mixtures wherein the mentioned mono- or disaccharides are predominant. Glucose is used as an example, in this instance.

The treatment preparations are in the form of aqueous solutions or emulsions, which may be formulated into shampoos or permanent wave setting lotions (cols. 3 and 5-6). Witsozki teaches that the sugars are present in the composition in percentages ranging from 0.1% to 8% by weight (col. 2, lines 24-30). This range clearly meets the applicant's required range of 0.01% to 5.00%.

The instant invention is drawn to a method of protecting a keratinous fiber from extrinsic damage or repairing a keratinous fiber following extrinsic damage, comprising the application of C_3-C_5 monosaccharide sugar composition.

Witsozki teaches such a method for regenerating, revitalizing or *repairing* hair comprising applying mono- or disaccharide sugar, particularly of pentoses (5 C-atoms) and the disaccharides derived from pentoses (see col. 2, lines 36-40). Witsozki teach at col. 6, lines 3-5, that, "in every case, it was found that the hairs had been regenerated, i.e., the split-ends had been partially repaired."

Witsozki *et al.* do not teach the step of heating said keratinous fiber to at least 45°C.

Buheitel ('250) teaches a permanent hair shaping composition and process for permanently shaping hair comprising the step of allowing the permanent shaping composition to advantageously react at a higher temperature, particularly at 30° to 45°C. For stabilizing the hairstyle, hair is preferably treated with alternative styling processes using higher temperatures in the range of 30° to 55°C (see reference column 2, lines 59-61); (col. 5, line 38 – col. 6, line 17). The hair shaping corresponds to a permanent shaping composition, which is commonly used for severely damaged hair through chemicals, *i.e.*, oxidatively treated hair (col. 3, lines 22-33).

It would have been obvious to one of ordinary to one of ordinary skill in the art at the time the invention was made to employ higher temperatures, such as 30° to 55°C, as taught by Buheitel within the processes employed by Witsozki, who teaches a method of repairing split-end hair, comprising sugars because Buheitel teaches that it is advantageous to allow the permanent shaping composition to advantageously react at a higher temperature, particularly at 30° to 45°C and alternatively at 30° to 55°C in order to lessen the reaction time for oxidatively treated hair or severely damaged hair. The expected result would be an enhanced method for the care of treated and untreated hair.

The teachings of Wisotzki are delineated above. Witsozki *et al.* do not teach the step of heating said keratinous fiber to at least 45°C.

Naito *et al.* ('229) teach a heating permanent waving agent and method comprising heating hair at a temperature of 40° to 160°C. The heating temperature and time vary depending on the degree in which the hair is allowed to be damaged (col. 5, lines 16-32). Naito *et al.* teach that healthy hair, which is free of any permanent waving, hair dyeing or bleaching, is treated more advantageously at higher temperatures. They also teach that taking into account the damage of the hair by heating, the temperature is 40° to 160°C, preferably from 40° to 80°C (col. 5, lines 32-59). Naito *et al.* teach that especially, the application of the waving agent using heat, is advantageous in solving problems of known permanent waving agents because, since highly concentrated alkaline agents or reducing and oxidizing substances are not used, damages of the

hair caused by elution of hair proteins can be mitigated. The agent of their invention is less irritating to the skin and has better storage stability.

It would have been obvious to one of ordinary to one of ordinary skill in the art at the time the invention was made to employ higher temperatures, such as the 40° to 160°C, as taught by Naito *et al.* within the processes employed by Witsozki, who teaches a method of repairing split-end hair, comprising sugars because Naito *et al.* teach that it is especially advantageous to treat healthy hair at higher temperatures (*i.e.*, 40° to 160°C) and also teach that damage to hair caused by elution of hair proteins can be mitigated, when employing such temperatures (*i.e.*, 40° to 160°C). The expected result would be an improved, gentle and non-irritating hair treatment method for use on both healthy and damaged hair.

Claims 30-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koga *et al.* (U.S. Pat. No. 5,660,838) in view of Buheitel (U.S. Pat. No. 6,116,250) OR Naito *et al.* (U.S. Pat. No. 4,935,229).

The instant invention is drawn to a method of protecting a keratinous fiber from extrinsic damage or repairing a keratinous fiber following extrinsic damage, comprising applying to said keratinous fiber a composition comprising at least one sugar chosen from C_3-C_5 monosaccharides and derivatives thereof; and heating said keratinous fiber to at least 45°C, wherein said at least one sugar is present in an amount effective to protect said keratinous fiber or repair said keratinous fiber, further wherein said composition is applied prior to heating or during said heating, wherein protecting a keratinous fiber means preserving a greater degree of the α-structure and/or tensile strength of the keratinous fiber following treatment of the

keratinous fiber with said composition as compared to not treating the keratinous fiber with said composition; and wherein repairing a damaged keratinous fiber means increasing the α-structure and/or tensile strength of the damaged keratinous fiber following treatment of the damaged keratinous fiber with said composition as compared to not treating the keratinous fiber with said composition.

***Koga* ('838)** teaches a method for providing enhanced moisture retention and reducing excessive roughness and dryness of the hair comprising the application of a xylobiose sugar composition to the hair (see Abstract). Koga teaches that xylobiose preparations are effective not only in reducing excessive roughness and dryness of the skin to impart a natural moistness and luster but also in reducing excessive roughness and dryness of the hair to give a natural oiliness (col. 1, lines 8-14).

Xylobiose may be incorporated into hair care products, such as hair treatments, rinses and hair conditioners, and detergents such as hair shampoos and body shampoos. The preparations can be formulated into various dosage forms, such as aqueous solutions, emulsions and water/oil bilayer systems (col. 2, lines 14-26).

Xylobiose is taught to be contained in an amount of 0.0001% to 20-wt %, preferably 0.1% to 10 wt % of the composition (col. 2, lines 27-36). This range clearly meets the applicant's required range of 0.01% to 5.00%.

Koga teaches that the xylobiose composition contains xylan saccharifed products other than xylobiose, such as xylose and xylotriose. These materials will in no way, impair the moisture-retaining capability of xylobiose (col. 2, lines 37-46).

Bases that are used in the cosmetic compositions can include, sugar esters, saccharides and sorbitol, for example (col. 3, lines 5-15). The examples in columns 4-9, taught by Koga demonstrate the measurements of moisture retaining capability of xylobiose in various skin preparations. In Example 7 (col. 10), Koga teaches the use of xylobiose in a hair shampoo formulation. The results show a natural oiliness when actually applied to the hair and are satisfactory in reducing excessive roughness and dryness of the hair (and skin) (col. 10, lines 1-27).

The instant invention is drawn to a method of protecting a keratinous fiber from extrinsic damage or repairing a keratinous fiber following extrinsic damage. There is no distinction observed between the prior art and the instant invention, since the prior art teaches the reduction of roughness and dryness of the hair. The examiner notes that this is, in essence, a reparative process for improving damaged hair.

Koga teaches a method for reducing excessively dry, rough hair and restoring hairs natural oiliness with moisture. Rough, dry hair is usually brittle, weak hair. As is generally known, hair that is moist or oily tends to be stronger in nature than rough, dry hair. Koga teaches that the xylobiose composition, which is used in various forms (i.e., hair care products, such as hair treatments, conditioners, rinses, shampoos, etc), reduces the excessive dryness and roughness of hair.

Koga does not teach the step of heating said keratinous fiber to at least 45°C.

Buheitel ('250) teaches a permanent hair shaping composition and process for permanently shaping hair comprising the step of allowing the permanent shaping composition to

advantageously react at a higher temperature, particularly at 30° to 45°C. For stabilizing the hairstyle, hair is preferably treated with alternative styling processes using higher temperatures in the range of 30° to 55°C (see reference column 2, lines 59-61); (col. 5, line 38 – col. 6, line 17). The hair shaping corresponds to a permanent shaping composition, which is commonly used for severely damaged hair through chemicals, *i.e.*, oxidatively treated hair (col. 3, lines 22-33).

It would have been obvious to one of ordinary to one of ordinary skill in the art at the time the invention was made to employ higher temperatures, such as 30° to 55°C, as taught by Buheitel within the processes employed by Koga because Buheitel teaches that it is advantageous to allow the permanent shaping composition to advantageously react at a higher temperature, particularly at 30° to 45°C and alternatively at 30° to 55°C in order to lessen the reaction time for oxidatively treated hair or severely damaged hair. The expected result would be an enhanced method for the treatment of hair.

The teachings of Koga are delineated above. Koga does not teach the step of heating said keratinous fiber to at least 45°C.

Naito *et al.* ('229) teach a heating permanent waving agent and method comprising heating hair at a temperature of 40° to 160°C. The heating temperature and time vary depending on the degree in which the hair is allowed to be damaged (col. 5, lines 16-32). Naito *et al.* teach that healthy hair, which is free of any permanent waving, hair dyeing or bleaching, is treated more advantageously at higher temperatures. They also teach that taking into account the damage of the hair by heating, the temperature is 40° to 160°C, preferably from 40° to 80°C (col.

5, lines 32-59). Naito *et al.* teach that especially, the application of the waving agent using heat, is advantageous in solving problems of known permanent waving agents because, since highly concentrated alkaline agents or reducing and oxidizing substances are not used, damages of the hair caused by elution of hair proteins can be mitigated. The agent of their invention is less irritating to the skin and has better storage stability.

It would have been obvious to one of ordinary to one of ordinary skill in the art at the time the invention was made to employ higher temperatures, such as the 40° to 160°C, as taught by Naito *et al.* within the processes employed by Koga because Naito *et al.* teach that it is especially advantageous to treat healthy hair at higher temperatures (*i.e.*, 40° to 160°C) and also teach that damage to hair caused by elution of hair proteins can be mitigated, when employing such temperatures (*i.e.*, 40° to 160°C). The expected result would be effective and non-irritating hair treatment method for use on healthy and unhealthy (treated) hair.

Claims 30-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Syed *et al.* (U.S. Pat. No. 5,641,477) in view of Buheitel (U.S. Pat. No. 6,116,250) OR Naito *et al.* (U.S. Pat. No. 4,935,229).

The instant invention is drawn to a method of protecting a keratinous fiber from extrinsic damage or repairing a keratinous fiber following extrinsic damage, comprising applying to said keratinous fiber a composition comprising at least one sugar chosen from C_3-C_5 monosaccharides and derivatives thereof; and heating said keratinous fiber to at least 45°C, wherein said at least one sugar is present in an amount effective to protect said keratinous fiber or repair said keratinous fiber, further wherein said composition is applied prior to heating or

during said heating, wherein protecting a keratinous fiber means preserving a greater degree of the α-structure and/or tensile strength of the keratinous fiber following treatment of the keratinous fiber with said composition as compared to not treating the keratinous fiber with said composition; and wherein repairing a damaged keratinous fiber means increasing the α-structure and/or tensile strength of the damaged keratinous fiber following treatment of the damaged keratinous fiber with said composition as compared to not treating the keratinous fiber with said composition.

***Syed* ('477)** teaches a method for the reduction of hair damage and a process for relaxing hair fibers, comprising applying to the hair fibers, a lanthioniztion composition that comprises sugars, resulting in less damaged hair that has *greater tensile strength* as that compared to hair that does not contain sugar. The composition may contain one or more sugars, or a combination of hydrogenated starch and sugars. Syed teaches that the sugar may be contained in the composition in the range of about 0.1% to about 5.0% by weight of the composition (see reference column 2, lines 48-67). This range clearly meets the applicant's required range of 0.01% to 5.00%.

Representative sugars that can be used in the composition include, but are not limited to sucrose, glucose, fructose, sorbitol and glycerol. The sugars preferably used are sucrose or sorbitol (col. 3, lines 5-8). Syed teaches that the composition may be in the form of a solution or a cream (col. 3, lines 9-12).

The instant invention is drawn to a method of protecting a keratinous fiber from extrinsic damage or repairing a keratinous fiber following extrinsic damage, wherein repairing a damaged

keratinous fiber, according to the applicant's interpreted definition, means increasing the alpha-structure and/or increasing the tensile strength of damage to keratinous fibers.

Syed teaches a method for increasing the tensile strength and reducing hair damage comprising the application of a composition composed of sugars (i.e., sucrose, glucose, fructose, sorbitol and glycerol). Syed explicitly teaches at col. 2, lines 48-56, that the addition of a sugar, directly applied to the lanthionization composition, surprisingly, results in hair that has greater tensile strength as compared to a lanthionization composition, which does not contain any sugars.

The applicant attempts to distinguish over the prior art by including specific definitions for the terms, "protecting" and "repairing". However, the prior art fully meets the criteria for providing an effective composition for preserving or increasing the tensile strength of hair. In addition, the applicant's have not shown any unexpected results that accrue from the use of C_3-C_5 sugars. The prior art has initially shown that beneficial effects are brought about by the use of various sugars in hair compositions.

Syed *et al.* do not teach the step of heating said keratinous fiber to at least 45°C.

Buheitel ('250) teaches a permanent hair shaping composition and process for permanently shaping hair comprising the step of allowing the permanent shaping composition to advantageously react at a higher temperature, particularly at 30° to 45°C. For stabilizing the hairstyle, hair is preferably treated with alternative styling processes using higher temperatures in the range of 30° to 55°C (see reference column 2, lines 59-61); (col. 5, line 38 – col. 6, line 17).

The hair shaping corresponds to a permanent shaping composition, which is commonly used for severely damaged hair through chemicals, *i.e.*, oxidatively treated hair (col. 3, lines 22-33).

It would have been obvious to one of ordinary to one of ordinary skill in the art at the time the invention was made to employ higher temperatures, such as 30° to 55°C, as taught by Buheitel within the hair damage reduction processes of Syed *et al.* because Buheitel teaches that it is advantageous to allow the permanent shaping composition to advantageously react at a higher temperature, particularly at 30° to 45°C and alternatively at 30° to 55°C in order to lessen the reaction time for oxidatively treated hair or severely damaged hair. The expected result would be an enhanced method for treating hair effectively and advantageously.

The teachings of Syed *et al.* are delineated above. Syed *et al.* do not teach the step of heating said keratinous fiber to at least 45°C.

Naito *et al.* ('229) teach a heating permanent waving agent and method comprising heating hair at a temperature of 40° to 160°C. The heating temperature and time vary depending on the degree in which the hair is allowed to be damaged (col. 5, lines 16-32). Naito *et al.* teach that healthy hair, which is free of any permanent waving, hair dyeing or bleaching, is treated more advantageously at higher temperatures. They also teach that taking into account the damage of the hair by heating, the temperature is 40° to 160°C, preferably from 40° to 80°C (col. 5, lines 32-59). Naito *et al.* teach that especially, the application of the waving agent using heat, is advantageous in solving problems of known permanent waving agents because, since highly concentrated alkaline agents or reducing and oxidizing substances are not used, damages of the

hair caused by elution of hair proteins can be mitigated. The agent of their invention is less irritating to the skin and has better storage stability.

It would have been obvious to one of ordinary to one of ordinary skill in the art at the time the invention was made to employ higher temperatures, such as the 40° to 160°C, as taught by Naito *et al.* within the processes employed by Syed *et al.* because Naito *et al.* teach that it is especially advantageous to treat healthy hair at higher temperatures (*i.e.*, 40° to 160°C) and also teach that damage to hair caused by elution of hair proteins can be mitigated, when employing such temperatures (*i.e.*, 40° to 160°C). The expected result would be a gentle, yet effective method for treating hair, for ease and satisfaction to the consumer.

It is the position of the Examiner, that given the teachings of the prior art, the instant invention, when taken as a whole, would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Pertinent Art

Prior Art deemed relevant, but not relied upon by the Examiner:

- **U.S. Patent No. 6,241,977** (McMullen *et al.*) (06/2001)

  - McMullen *et al.* disclose a method of thermally protecting hair against thermal degradation when heat treating at 100°C-180°C (see column 2, lines 7-11).

- **U.S. Patent No. 5,617,883** (Savaides *et al.*) (04/1997)

  - Savaides *et al.* disclose a method of permanent waving of hair by heating hair at a temperature of about 50°C (see column 5, lines 40-43).

Response to Arguments

Applicant's arguments filed 01/09/06 have been fully considered.

Applicant argued the following:

- "Syed, Wisotzki and Koga did not render claim 30 unpatentable even without the inclusion of a method step in which the keratinous fiber is heated to at least 45°C. None of the references cited teach or suggest that the keratinous fiber should be 'heated' as the term would be understood by one of ordinary skill in the art".

Applicant's arguments have been considered but were not found persuasive in view of the newly cited references. Admittedly, while Syed, Wisotzki and Koga do not teach heating of keratinous fiber to a temperature of at least 45°C, the reference of Buheitel clearly demonstrates the teaching of employing a heating step to keratinous fibers, whereby the fibers can be treated at a temperature in the range of 30° to 55°C (see reference column 2, lines 59-61); (col. 5, line 38 – col. 6, line 17). Additionally, Naito *et al.* teaches a permanent waving agent and method comprising heating hair at a temperature of 40° to 160°C. These references clearly meet Applicant's claimed limitation of heating to at least 45°C.

- "Wisotzki teaches compositions that can be used in hair rinses to reduce the number of split ends. In the Example the compositions are allowed to cool either to 25°C or 30°C. It is unclear from the examples, however, if the compositions are actually applied to a keratinous fiber at those temperatures. Assuming for the

sake of argument that the compositions are used as hair rinses at 25°C or 30°C, those temperatures are not at least 45°C as claimed."

Applicant's arguments have been considered but were not found persuasive. The Wisotzki reference recognizes the use of temperatures as high as 30°C. While Wisotzki does not teach the step of heating at least 45°C as claimed, the Buheitel and Naito patents sufficiently remedy this deficiency of Wisotzki by their teaching of heating keratinous fibers to a temperature in the range of 30° to 55°C (Buheitel) and at a temperature of 40° to 160°C (Naito et al.). Both references recognize and teach that employing high temperatures in heating processes is advantageous. Thus, the prior art is clearly entailed to a similar composition as claimed by Applicant.

- "The only time Koga discusses a temperature is with respect to the humidity chamber experiments, which in some cases expose the composition to 35°C. Besides not teaching the recited temperature, Koga does not teach applying the composition to a keratinous fiber prior to or during the heating. Instead, Koga heats a sample of the composition as part of the humidity chamber experiments, which do not involve application of the composition to a keratinous fiber. Koga does not teach or suggest the method step of heating a keratinous fiber to at least 45°C as claimed."

Applicant's arguments were not persuasive. Koga recognizes and teaches obtaining a temperature of the composition to 35°C. While Koga does not teach or suggest the method step of heating a keratinous fiber to at least 45°C as claimed, Buheitel and Naito *et al.* both teach heating hair to high temperatures. Buheitel has been cited for his

teaching of permanent hair shaping at a temperature of 30° to 55°C. Additionally, Naito *et al.* has been cited for their teaching of a hair-waving agent whereby hair is heated at a temperature of 40° to 160°C. Both of these references meet the temperature of at least 45°C as claimed by Applicant.

- Syed mentions only a tepid water rinse application of the lanthionizing composition and evaluating the tensile strength while the hair is immersed in water at a temperature of 21°C. There is nothing in Syed that suggests that it could be important to heat the keratinous fiber to minimize the decrease in tensile strength that results from applying the lanthionizing composition."

Applicant's arguments were not persuasive. The instant claims recite a method of protecting a keratinous fiber from extrinsic damage. The instant claims do not recite a method of minimizing the decrease in tensile strength of hair. In any event, Syed amply recognizes and teaches formulations for the effective reduction of hair damage as similarly desired by Applicants.

- "Wisotzki uses a C_6 sugar (glucose) in the examples and mentions that glucose is preferably used in the composition for repairing split ends. Since glucose a C_6 sugar is preferred, the ordinary artisan would not have been motivated to select other sugars for inclusion in a method that is not the same as Wisotzki's method.

Applicant's arguments were not persuasive. Applicants have not demonstrated any unexpected or superior results, which accrue from the use of the instantly claimed (C_3 to C_5) sugars. Additionally, Examiner notes that preferred as well as non-

preferred teachings are taken into consideration for the determination of patentable subject matter.

- Syed does not provide any motivation to select a C_3 to C_5 sugar from among the sugars mentioned. Syed is directed to a process for relaxing hair fibers with a lanthionizing composition. Syed uses C_6 sugars in the examples. One of ordinary skill in the art would have to modify the method steps of Syed to include a step of heating a keratinous fiber to at least 45°C."

These arguments were not persuasive. The newly cited references of Buheitel and Naito et al. teach heating keratinous fibers to a temperature in the range of 30° to 55°C (Buheitel) and at a temperature of 40° to 160°C (Naito et al.). Both references recognize and teach that employing high temperatures in heating processes is especially advantageous. The prior art vividly teaches a similar composition, comprising similar components, for use in the same field of endeavor to treat similar problems as that claimed by Applicants.

- Koga is directed to 'xylobiose-containing skin preparations. Koga's teachings are limited to xylobiose, a C5 dimer, although the reference indicates that the related products of xylose and xylotriose may be present in the xylobiose composition without any impairment of the moisture-retaining properties of xylobiose. The narrow teachings do not suggest that other C3 to C5 monosachharides could be substituted in the composition."

Applicant's arguments were not persuasive. Koga amply demonstrates the use of sugars in hair preparations to enhance moisture retention and reduce excessive

roughness and dryness of hair. While Koga is mainly directed to xylobiose, related products of xylose and xylotriose may also be present, as admitted by Applicant themselves.

- "Claims 47-50 and 52 recite that the method comprises applying a composition that comprises at least one additional sugar. The office has not established a *prima facie* case of obviousness with respect to independent claim 30."

A *prima facie* case of obviousness has clearly been established, since the prior art effectively teaches compositions for use on the hair whereby hair is heated at temperatures ranging from 30° to 160°C. Moreover, Examiner points out that generally, differences in temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation". *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In the instant case, Applicants have not demonstrated any unexpected or unusual results that accrue from the claimed temperature of 'at least 45°C'. The prior art recognizes and teaches hair care formulations comprising the use of sugars to result in a decrease of damage to hair and increase in reparation of hair. Thus, in view of the teachings of the art, the instant invention is rendered *prima facie* obvious.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Humera N. Sheikh whose telephone number is (571) 272-0604. The examiner can normally be reached on Monday through Friday from 8:00A.M. to 5:30P.M., alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thurman Page, can be reached on (571) 272-0602. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Humera N. Sheikh

Patent Examiner

Art Unit 1615

April 3, 2006

hns